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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention]The filter paper filters, such as an air filter this invention excelled [air filter] in dust holding capacity, or for these filters.
[0002]
[Description of the Prior Art]The filter paper for air filters which can catch the submicron particle in the air efficiently is used for catching of the floating fine particle in the air in clean room, such as clean rooms, such as the electronic precision machinery industry, a biological clean room, and a clean bench. Generally, make it distribute underwater and such a filter paper for air filters carries out wet paper making of the detailed glass fiber, In order to demonstrate the time of re-entrainment prevention of textiles, and processing or the intensity maintenance after processing, and the other characteristics furthermore, carry out dipping processing into a resin solution or emulsion liquid, and it is made to dry after that, and is manufactured.
[0003]Generally as the above-mentioned resin, a wax and silicon are used together by using acrylic resin, urethane system resin, polyvinyl alcohol system resin, or epoxy system resin as base resin, and it adheres to 1 to 10 % of the weight to glass fiber 1 micrometer or less in diameter.
[0004]It sets in order of a pre-filter, a middle filter, and an HEPA filter from the one coarser generally as composition of a filter, and the filtration efficiency is improved.
[0005]Here, importance is attached to the retention volume (DHC) of the dust in which the filtration efficiency also caught the feature of the filter paper used for a middle filter with last thing.
[0006]The method of producing a filter using the multilayer paper-making method for carrying out paper making of the textiles from which ** thickness differs independently, and piling them up change the thickness of a fiber diameter in the thickness direction of ** filter one by one,

and give a density gradient as this measure, etc., etc. are proposed.

[0007]

[Problem(s) to be Solved by the Invention]The filter obtained by the above-mentioned conventional technology makes the coat of resin on the intersection of the textiles of a filter paper, and textiles which carried out paper making, and becomes a cause by which this coat reduces the dust retention capacity of a filter. Then, the technical problem of this invention is providing the filter paper or filter which did not form the coat of resin in the intersection of the glass fiber which carried out paper making, but was excellent in dust holding capacity (DHC).

[0008]

[Means for Solving the Problem]An aforementioned problem of this invention is attained by the next composition. That is, it is a filter produced by assembling a filter paper which combines glass fiber with an intersection of glass fiber which carried out paper making using a cationic binder which does not form a coat of resin, or this filter paper.

[0009]Resin generally used is anionic and a glass surface is also anionic. For this reason, condensation is caused and a coat is formed as familiarity to glass fiber and resin is bad, it dries and moisture disperses.

[0010]However, according to this invention, since the ionicity of a binder is cationicity, it is easy to get used with the anionic glass fiber surface, and a coat of resin is not formed in an intersection of glass fiber.

[0011]

[Embodiment of the Invention]An embodiment of the invention is described. Glass fiber and a glass chopped strand are made to distribute underwater, paper making of this slurry is carried out with a paper machine, and a wet paper web is obtained. There is no restriction in particular in the glass fiber and the glass chopped strand to be used, for example, boro-silicated glass, high silica glass, E glass, etc. are used for them.

[0012]In order to improve [and] a slurry also as neutrality dispersibility of the glass fiber in a slurry in carrying out wet paper making, a small amount of acid can be added to water, and a slurry can also be made into about pH two to eight acidity. That is, the dispersibility of glass fiber becomes good so that pH of a slurry is low, but acidity will be too strong at less than pH two, it will have an adverse effect on glass fiber, a device, etc., and dispersibility worsens or more by pH eight. As for pH of a slurry, adjusting to two to about eight is preferred.

[0013]As acid used for the pH adjustment of a slurry, inorganic acid, such as chloride, sulfuric acid, and nitric acid, is used, in addition organic acid, such as acetic acid, can also be used.

[0014]Subsequently, resin for cationic binders is made to adhere to the obtained wet paper web. As the adhesion method of this binder, although there is no restriction in particular, the method of ** of the following and ** is employable, for example.

** Carry out the dipping of the wet paper web to cationic emulsion liquid, and attract and

remove the resin which adhered too much.

** Spray or apply cationic emulsion liquid to the surface of a wet paper web with a spray.

[0015]Resin of the cationic emulsion raw material used here is acrylic ester copolymer, dimethylpolysiloxane, polyamide resin, a fluoro-resin, etc.

[0016]It is preferred that it is 0.1 to 10 % of the weight as concentration of the binder liquid which consists of a cationic emulsion using the above-mentioned resin. If the deposit efficiency of binder concentration to a wet paper web is bad at less than 0.1 % of the weight and it exceeds 10 % of the weight, as compared with the thing of 10 % of the weight of deposit efficiency, it is same to deposit efficiency, but it becomes a high cost.

[0017]Thus, after processing a wet paper web with cationic emulsion liquid, this is dried at a stoving furnace etc. As for drying temperature, it is preferred to consider it as 110-220 **.

[0018]

[Example]Hereafter, the example and comparative example of this invention are explained. Wet paper making of three kinds of glass fibers, the mean fiber diameter of 1 micrometer, 2 micrometers, and 6 micrometers, was carried out with the paper machine after distributing the micro glass fiber mixed at a rate of ten weight sections, 30 weight sections, and 60 weight sections, respectively in the sulfuric acid solution of pH 4.